Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Withdrawn) A radiolabeled immunotoxin comprising a toxic domain, a targeting domain, and at least one radionuclide atom, wherein the targeting domain is a single-chain Fv (sFv) antibody fragment that binds to a target molecule on a target cell, wherein the target molecule is not an ϵ chain of a T cell CD3 complex.

2. (Withdrawn) The radiolabeled immunotoxin of claim 1, wherein the toxic domain is a toxic polypeptide selected from the group consisting of: (a) ricin, (b) *Pseudomonas* exotoxin (PE); (c) bryodin; (d) gelonin; (e) α-sarcin; (f) aspergillin; (g) restrictocin; (h) angiogenin; (i) saporin; (j) abrin; (k)pokeweed antiviral protein (PAP); (l) a ribonuclease; (m) a pro-apoptotic polypeptide; and (n) a functional fragment of any of (a)-(m).

3. (Withdrawn) The radiolabeled immunotoxin of claim 1, wherein the toxic domain is diphtheria toxin (DT) or a functional fragment thereof.

4. (Withdrawn) The radiolabeled immunotoxin of claim 3, wherein the toxic domain comprises amino acids 1-389 of DT.

5. (Withdrawn) The radiolabeled immunotoxin of claim 1, wherein the target cell is a cancer cell.

6. (Withdrawn) The radiolabeled immunotoxin of claim 5, wherein the cancer cell is selected from the group consisting of a neural tissue cancer cell, a melanoma cell, a breast cancer cell, a lung cancer cell, a gastrointestinal cancer cell, an ovarian cancer cell, a testicular cancer cell, a lung cancer cell, a prostate cancer cell, a cervical cancer cell, a bladder cancer cell, a vaginal cancer cell, a liver cancer cell, a renal cancer cell, a bone cancer cell, and a vascular tissue cancer cell.

7. (Withdrawn) The radiolabeled immunotoxin of claim 5, wherein the target molecule is Her-2/neu.

8. (Withdrawn) The radiolabeled immunotoxin of claim 5, wherein the target molecule is selected from the group consisting of a mucin molecule, carcinoembryonic antigen (CEA), prostate-specific antigen (PSA), folate binding receptor, A33 alpha fetoprotein, CA-125 glycoprotein, colon-specific antigen p, ferritin, p-glycoprotein, G250, OA3, PEM glycoprotein, L6 antigen, 19-9, P97, placental alkaline phosphatase, 7E11-C5, 17-1A, TAG-72, 40 kDa glycoprotein, URO-8, a tyrosinase, an interleukin- (IL-)2 receptor polypeptide, an IL-3 receptor polypeptide, an IL-13 receptor polypeptide, an IL-4 receptor polypeptide, a vascular endothelial growth factor (VEGF) receptor, a granulocyte macrophage-colony stimulating factor (GM-CSF) receptor polypeptide, an epidermal growth factor (EGF) receptor polypeptide, an insulin receptor polypeptide, an insulin-like growth factor receptor polypeptide, transferrin receptor, estrogen receptor, a T cell receptor (TCR) α-chain, a TCR β-chain, a CD4 polypeptide, a CD8 polypeptide, a CD7 polypeptide, a B cell immunoglobulin (Ig) heavy chain, a B cell Ig light chain, a CD19 polypeptide, a CD20 polypeptide, a CD22 polypeptide, a MAGE polypeptide, a BAGE polypeptide, a GAGE polypeptide, a RAGE polypeptide, a PRAME polypeptide, and a GnTV polypeptide.

9. (Withdrawn) The radiolabeled immunotoxin of claim 1, wherein the radionuclide is selected from the group consisting of ^{90}Y, ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Pb, ^{212}Bi, ^{213}Bi, ^{123}I, ^{125}I,

^{131}I, ^{211}At, ^{32}P, ^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, ^{199}Au, ^{99m}Tc, ^{111}In, ^{124}I, ^{18}F, ^{11}C, ^{198}Au, ^{75}Br, ^{76}Br, ^{77}Br, ^{13}N, ^{34m}Cl, ^{38}Cl, ^{52m}Mn, ^{55}Co, ^{62}Cu, ^{68}Ga, ^{72}As, ^{76}As, ^{72}Se, ^{73}Se, and ^{75}Se.

10. (Withdrawn) A radiolabeled multimeric immunotoxin comprising:

(a) at least two monomers; and

(b) at least one radionuclide atom,

wherein each monomer comprises a targeting domain and a toxic domain and is physically associated with the other monomers,

wherein the targeting domain binds to a target molecule on a target cell.

11. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 10, wherein each of said monomers further comprises one or more coupling moieties and the physical association of the monomer is by at least one of the one or more coupling moieties.

12. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 11, wherein the coupling moiety is a terminal moiety.

13. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 12, wherein the terminal moiety is a C-terminal moiety.

14. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 11, wherein the one or more coupling moieties are cysteine residue.

15. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 11, wherein at least one of the one or more coupling moieties is a heterologous coupling moiety.

16. (Withdrawn) The radiolabeled multimeric immunotoxin of claim 10, wherein each of the monomers comprises the same amino acid sequence.

17. (Cancelled)

18. (Currently amended) A method of delivering a radiolabeled immunotoxin to a subject suspected of having a cancer, the method comprising:

(a) identifying a subject suspected of having a cancer; and

(b) administering to the subject a radiolabeled immunotoxin comprising a toxic domain, a targeting domain, and at least one radionuclide atom, wherein the targeting domain is a sFv antibody fragment that binds to a target Her-2/neu molecule on a cancer cell in the subject and the at least one radionuclide atom is selected from the group consisting of ^{90}Y, ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Pb, ^{212}Bi, ^{213}Bi, ^{123}I, ^{131}I, ^{211}At, ^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, ^{199}Au, ^{99m}Tc, ^{111}In, ^{124}I, ^{18}F, ^{11}C, ^{198}Au, ^{75}Br, ^{76}Br, ^{77}Br, ^{13}N, ^{34m}Cl, ^{38}Cl, ^{52m}Mn, ^{55}Co, ^{62}Cu, ^{68}Ga, ^{72}As, ^{76}As, ^{72}Se, ^{73}Se, and ^{75}Se.

19. (Withdrawn) The method of claim 18, wherein the toxic domain is a toxic polypeptide selected from the group consisting of: (a) ricin, (b) *Pseudomonas* exotoxin (PE); (c) bryodin; (d) gelonin; (e) α-sarcin; (f) aspergillin; (g) restrictocin; (h) angiogenin; (i) saporin; (j) abrin; (k) pokeweed antiviral protein (PAP); (l) a ribonuclease; (m) a pro-apoptotic polypeptide, and (n) a functional fragment of any of (a)-(m).

20. (Original) The method of claim 18, wherein the toxic domain is diphtheria toxin (DT) or a functional fragment thereof.

21. (Original) The method of claim 20, wherein the functional fragment comprises amino acids 1-389 of DT.

22. (Cancelled)

23. – 25. (Cancelled)

26. (Previously presented) The method of claim 18, wherein the method is a method of killing a target cell in the subject.

27. (Previously presented) The method of claim 26, wherein the at least one radionuclide atom is selected from the group consisting of ^{90}Y, ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Pb, ^{212}Bi, ^{213}Bi, ^{123}I, ^{131}I, ^{211}At, ^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, and ^{199}Au.

28. (Previously presented) The method of claim 18, wherein the method is an imaging method.

29. (Previously presented) The method of claim 28, wherein the at least one radionuclide atom is selected from the group consisting of ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Bi, ^{123}I, ^{131}I, ^{211}At, ^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, ^{199}Au, ^{99m}Tc, ^{111}In, ^{124}I, ^{18}F, ^{11}C, ^{198}Au, ^{75}Br, ^{76}Br, ^{77}Br, ^{13}N, ^{34m}Cl, ^{38}Cl, ^{52m}Mn, ^{55}Co, ^{62}Cu, ^{68}Ga, ^{72}As, ^{76}As, ^{72}Se, ^{73}Se, and ^{75}Se.

30. - 39. (Cancelled)

40. (Previously presented) The method of claim 18, wherein the subject has a cancer.

41. (Currently amended) A method of killing a target cell in a subject ~~delivering a radiolabeled immunotoxin to a subject suspected of having a cancer~~, the method comprising:

(a) identifying a subject suspected of having a cancer; and

(b) administering to the subject a radiolabeled immunotoxin comprising a toxic domain, a targeting domain, and at least one radionuclide atom, wherein the targeting domain is a sFv antibody fragment that binds to a target Her-2/neu molecule on a cancer cell in the subject and

the at least one radionuclide atom is selected from the group consisting of ^{90}Y, ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Pb, ^{212}Bi, ^{213}Bi, ^{123}I, ^{131}I, ^{211}At,^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, and ^{199}Au[[,]] ~~wherein the method is a method of killing a target cell in the subject~~.

42. (Previously presented) The method of claim 41, wherein the toxic domain is a toxic polypeptide selected from the group consisting of: (a) ricin, (b) *Pseudomonas* exotoxin (PE); (c) bryodin; (d) gelonin; (e) α-sarcin; (f) aspergillin; (g) restrictocin; (h) angiogenin; (i) saporin; (j) abrin; (k) pokeweed antiviral protein (PAP); (l) a ribonuclease; (m) a pro-apoptotic polypeptide, and (n) a functional fragment of any of (a)-(m).

43. (Previously presented) The method of claim 41, wherein the toxic domain is diphtheria toxin (DT) or a functional fragment thereof.

44. (Previously presented) The method of claim 43, wherein the functional fragment comprises amino acids 1-389 of DT.

45. – 47. (Cancelled)

48. (Currently amended) ~~A method of delivering a radiolabeled immunotoxin to a subject suspected of having a cancer, the~~ An imaging method comprising:

(a) identifying a subject suspected of having a cancer; and

(b) administering to the subject a radiolabeled immunotoxin comprising a toxic domain, a targeting domain, and at least one radionuclide atom, wherein the targeting domain is a sFv antibody fragment that binds to a target Her-2/neu molecule on a cancer cell in the subject and the at least one radionuclide atom is selected from the group consisting of ^{186}Re, ^{188}Re, ^{64}Cu, ^{67}Cu, ^{212}Bi, ^{123}I, ^{131}I, ^{211}At, ^{177}Lu, ^{47}Sc, ^{105}Rh, ^{109}Pd, ^{153}Sm, ^{199}Au, ^{99m}Tc, ^{111}In, ^{124}I, ^{18}F, ^{11}C, ^{198}Au, ^{75}Br, ^{76}Br, ^{77}Br, ^{13}N, ^{34m}Cl, ^{38}Cl, ^{52m}Mn, ^{55}Co, ^{62}Cu, ^{68}Ga, ^{72}As, ^{76}As, ^{72}Se, ^{73}Se, and ^{75}Se[[,]]

~~wherein the method is an imaging method~~.

49. – 51. (Cancelled)

52. (New) The method of claim 48, wherein the toxic domain is a toxic polypeptide selected from the group consisting of: (a) ricin, (b) *Pseudomonas* exotoxin (PE); (c) bryodin; (d) gelonin; (e) α-sarcin; (f) aspergillin; (g) restrictocin; (h) angiogenin; (i) saporin; (j) abrin; (k) pokeweed antiviral protein (PAP); (l) a ribonuclease; (m) a pro-apoptotic polypeptide, and (n) a functional fragment of any of (a)-(m).

53. (New) The method of claim 48, wherein the toxic domain is diphtheria toxin (DT) or a functional fragment thereof.

54. (New) The method of claim 53, wherein the functional fragment comprises amino acids 1-389 of DT.

55. (New) The method of claim 41, wherein the subject has a cancer.

56. (New) The method of claim 48, wherein the subject has a cancer.